Author:
Vlachos & Co.

Title:
The amount subject

Place:
[n.p.]

Date:
1928

95-82474-7

MASTER NEGATIVE #

COLUMBIA UNIVERSITY LIBRARIES
PRESERVATION DIVISION

BIBLIOGRAPHIC MICROFORM TARGET

ORIGINAL MATERIAL AS FILMED - EXISTING BIBLIOGRAPHIC RECORD

RESTRICTIONS ON USE:

TECHNICAL MICROFORM DATA

FILM SIZE: 35mm REDUCTION RATIO: 12x IMAGE PLACEMENT: IA IIA IB IIB

DATE FILMED: 4/18/95 INITIALS: DG

TRACKING # : MSH 05614

FILMED BY PRESERVATION RESOURCES, BETHLEHEM, PA.

2.0 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

1.0 1.1 1.25 1.4 1.6 1.8 2.0 2.2 2.5 2.8 3.2 3.6 4.0 4.5 5.0 5.6

1.0 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

2.0 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

A5

A4

A3

PRECISION℠ RESOLUTION TARGETS

Century
A&P
1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

THE AMOUNT SUBJECT

The determination of the amount subject is the most difficult of all underwriting problems.

VLACHOS & CO.
FIRE INSURANCE INSPECTORS
100 WILLIAM ST.
NEW YORK

418 WALNUT ST.,
PHILADELPHIA, PA.

THE AMOUNT SUBJECT

AN UNDERWRITERS' ANALYSIS OF THE DEPENDABILITY OF CUT-OFFS

BY

C. A. VLACHOS

INTRODUCTION

There is nothing more vital to successful underwriting, from a physical point of view, than a correct appraisal of the subdivision of the risk offered, in other words: "the amount subject". The fact that the amount subject to one fire is frequently only a matter of personal opinion complicates matters. A conservative underwriter will not consider anything a cut-off which falls short of being an absolute fire-stop. He views the risk from the standpoint of the **possible** spread of fire, and not the **probable** extent of actual fire damage. Others, liberally inclined, will venture a degree of reliance upon joist and board floors in sprinklered buildings. They will vary contents lines in sprinklered buildings of this type of construction according to protection afforded the floor openings.

It is not intended to support one line of thought in preference to another. It is our business to inspect the risks and to furnish the busy underwriter with the information he requires to write them according to his own ideas. However, we give a description of the cut-offs in our reports and state what percentage of the values, in our opinion, is subject to one fire.

In arriving at these conclusions we cannot be guided by rule-of-thumb reasoning. There are too many considerations, involving construction, occupancy, susceptibility, processes, protection, exposures, and even the attitude of the assured, which enter into a gauging of the amount subject to one fire in a given risk, to permit other than that each risk be judged individually.

Inspection reports must be based upon conditions as they are, not as they theoretically should be. There may be a splendid fire door at a vital opening, which, from a rating standpoint may establish two separate risks, but from a practical underwriting standpoint may mean nothing.

Our reports may seem to differ radically as to the value of cut-offs with the ideas of other insurance organizations. Perhaps the map shows a sub-division in the risk offered, whereas the stock is all in one section. Sometimes long established practice is flatly contradicted.

It is for the purpose of explaining our attitude on this subject, and clearing away some of the cobwebs of theory, that this pamphlet is written. It will assist the underwriter in determining what is meant by "cut-offs" and "amount subject" when reading Vlachos reports.

C. A. V.

New York.
12-17-27.

I

ONE HUNDRED PER CENT SUBJECT

When, in insurance parlance, we say that the risk constitutes one fire area, we do not imply a probable total loss to the Companies. A total loss may be possible, but in view of construction, occupancy and protection afforded, is not probable. The term "One Hundred Per Cent Subject" carries the same meaning. The building may be sprinklered or unsprinklered, fireproof or frame, if it constitutes one fire area without well defined cut-offs, it remains one hundred per cent subject. It is then up to the underwriter to consider the information furnished in the report regarding construction, occupancy, protection, and the general desirability of the risk, in order to set his line. The pertinence of these factors, particularly the value of protection at floor openings and the relation of occupancy to probable fire-spread, will be discussed later.

If, in our opinion, the risk is subject to total destruction by fire, or from the nature of the contents, by smoke or water, we say definitely, "Subject to Total Loss."

II

WALLS AND FIREDOORS

We all agree that a substantial brick wall, well parapeted, without openings of any kind, constitutes a definite fire-stop, an "absolute" cut-off. This applies to the average risk, regardless of occupancy or fire protection. Certain hazardous occupancies may require even stronger treatment, but under the usual conditions we consider a parapeted blank brick wall a safe "cut-off."

When the wall has openings, irrespective of the construction or the occupancy of the risk, the cut-off no longer exists unless the openings are safely protected.

Standard protection for these openings calls for double, automatic fire doors built according to well defined specifications. But the existence of such doors is not by any means enough. The very fact of their presence may constitute a grave element of danger to the underwriter through their implied but non-existent efficacy.

A recent severe fire in a warehouse in New York City, well illustrating this point, is remembered by all local underwriters. The building was divided into several sections by parapeted brick walls with standard fire doors at openings. The "automatic" doors failed to close when the links fused, resulting in a fire-spread throughout the building.

It is an established fact, which has been proven through years of practical inspecting experience, that practically no automatic door will close upon the fusing of a link, if the door is not opened and closed daily. The reason is simple enough. Any mechanism will fail through disuse. The lubricants on the track and on the door bearings will gum sufficiently to retain the inertia of the door when the counter weights are released, unless the door is used regularly. In time the track and the rollers accumulate a thick coating of dust. Frequently considerable corrosion occurs at these points. Therefore it becomes necessary to test each fire door in a firewall, and we must know that the doors are closed and opened regularly before we may look upon the brick wall with standard fire doors as a dependable cut-off.

There are, however, other factors which have a tendency to affect the value of this cut-off.

We have the assured to deal with. Only too frequently a fire door is installed primarily to secure a rate concession. The door has no significance to the assured other than representing an expenditure which brought a profitable return in lowered insurance cost. He is not conscious of its importance as a fire-stop. Possibly the doorway is in a much-frequented portion of the plant, and through accidental closing interfered with high speed production; assured may be a very lax manager exercising little supervision over the plant; labor may be scarce and consequently hard to control so that there is practically no discipline in the plant; department managers, highly paid and highly regarded, may have no tolerance for the need of fire doors—in all such instances we are apt to find the doors in neglected condition, stock piled against doors, blocking of doors, presence of tracks or runways through door openings, etc., all completely "eliminating" the fire doors.

In one of the finest retail furniture stores in New Jersey, catering to a high class trade, a risk divided into several sections by brick walls with automatic fire doors, we found furniture displayed in almost every doorway, thoroughly blocking the fire doors. This condition is also found in the majority of department stores.

The underwriter, in instances of this kind, has no choice but to regard the doors as non-existent and write the risk accordingly. Certainly he cannot expect the employees to close the doors in event of fire, to the possible jeopardy of their own lives. It would take an hour or more to close some doors; it is impossible to close others. There may be no employee in the premises at the time, or no night or holiday watchman.

Beside the assured, we must also consider the occupancy, the processes and the nature of the stock in measuring the efficiency of fire doors.

An automatic fire door, in good working order, depends upon the fusing of a link to release the door. The heat of the fire must remain at the doorway long enough to fuse the link, but the door must close before the fire has spread through the doorway into the cut off building. We are now getting into difficulties, because we instantly think of flash fires, minor explosions, burning fluids, gases, etc. But the fact remains that you are called upon to insure such risks; the assured has tried for sundry reasons to sub-divide the risk; and the inspection office is required to pass upon the reliability of such subdivisions with the view to establishing the desirability of the risk and the amount subject.

It is not at all unusual for a fire to get foothold beyond the fire door before the door has closed, regardless of the excellent maintenance of such doors. This has occurred

time and again in textile mills, cottonseed oil mills, etc. It is certainly the responsibility of the inspector to carefully weigh these possibilities in determining the dependability of the fire doors, advising the underwriter accordingly.

Finally, a cut-off may not be **complete.** We recently inspected a risk in the Bronx where a veritable array of new, brightly shining fire doors greeted our eyes as we looked about the plant. We had a group of four brick buildings, with all intercommunicating openings protected in a perfect manner. These buildings were built around a one story large area centre section. All the buildings had unprotected windows overlooking the roof of the one story section. This furnished an excellent example of installing fire doors to save the pocket-book but not to save the plant.

In many retail stores it is the custom to house the fire doors in a boxing, hiding them from sight. It seems to us, if we were conducting a department store, we would have the fire doors in plain sight of the customers, calling attention to the safety to patrons they afforded. But it seems we know very little about conducting department stores, for we invariably find them cleverly concealed. This may be very good from a merchandising standpoint, but from a practical underwriting viewpoint it is certainly undesirable. The inspector cannot test the automatic devices because they are usually also housed in, and he is totally unable to inspect the track and other equipment to determine its working order.

The possibility of heat being transmitted across open spaces or through brick walls is another factor to be considered in cut-offs and exposures.

In the soft coal regions, and in artificial gas works we find coal burned under insufficient air in closed retorts. These retorts or ovens, if they are in a row, are charged alternately. When the coal has burned, the entire contents is withdrawn, and later a fresh charge of coal is placed in the oven. The heat from the adjoining burning ovens, transmitted through solid walls of fire-brick, is sufficient to ignite the fresh coal charges. If this is done so readily with small coal charges burning

under insufficient air, what could be accomplished with an immense stock of furniture under full draft?

When, under "Cut-Offs" in our reports, the reader finds we say "Cut-offs are Unreliable," he may rest assured that for some reason, usually briefly stated in the report, the cut-offs fail to measure up to a common-sense standard of dependability as above outlined.

III

FLOORS

Owing to the tremendous concentration of values in many loft buildings, the underwriter is compelled to give some consideration to "floor" cut-offs in fireproof buildings. In ordinary joisted buildings this is, of course, unthinkable, even when such buildings are sprinklered, but we will come to that later.

Reinforced concrete buildings or concrete imbedded steel frame buildings and others of equally standard construction are, in themselves, fireproof. They are like the furnace in the cellar, in that it depends upon what we put in them and how much draft or oxygen we provide as to how hot the fire will be. In a multi-storied building of such construction we should theoretically have a series of such furnaces, one above the other, each floor representing a separate and distinct unit. That such is not the case in actual practice is due to several important and inviolable principles .

The building, to be fit for occupancy, must have elevators, stairways and windows. The efficiency of the protection for these openings determines to a degree the value of the floors as cut-offs. As previously indicated, "occupancy" is the determining factor in the gauging of all cut-offs.

Of first importance is the **window** protection. If we have wireglass and self-closing metal sash at the windows we may be reasonably satisfied for the time being. Openings into light wells should be similarly protected.

Window protection of this type is preferable to shutter protection. We have no particular quarrel with shutters; we simply prefer wireglass for the reason we find it to be "on the job" a greater percentage of the time. In this day and generation, the actual closing of shutters after working hours is hardly to be expected, and during day-time they **must** be open. And who is to close these shutters after the fire is once well under way?

Next in importance are the stair and elevator openings. We usually find a fireproof shaft, housing the passenger elevators and stairways and sometimes the hallways. The doors to the hallway are self-closing and are metal covered. Counterbalanced metal-clad or steel doors on freight elevator shafts are usually found to be kept closed. For that reason we consider stairs and elevators to be of secondary importance in floor cut-offs. There are exceptions, and it is to note these exceptions that inspections are made, for an underwriter cannot afford to base his lines on false security in cut-offs.

It is useless to measure the value of floor cut-offs without viewing them in the light of the occupancy. A fireproof office building, with **unprotected** window openings, will not present as much floor-to-floor exposure hazard as a fireproof furniture warehouse with **protected** windows.

We recall an unusual instance in Pittsburgh, Pa., where a fire, starting in one of the lower floors of a fireproof building with wireglass windows, spread to the 10th floor, almost completely gutting the building. The fire started in a motion picture film storeroom.

Where there is **sufficient fuel** to feed a fire, it is not advisable to place much reliance on floor cut-offs, therefore occupancy of the risk in question must be carefully considered. The same stock and process factors enter into this problem as were discussed under "Walls and Firedoors," with the added fact that fire has a natural tendency to go "upwards."

Another factor to be considered is the occasional subdivision of a loft by terra-cotta or gypsum block partitions. We do not imply that they are firewalls, but in many instances they serve very effectively as fire retardants. If such partitions are built from floor to ceiling, they prevent for a time, a firesweep across the

loft. This is certainly important in risks where highly inflammable material is present.

A motion picture film printing and developing plant in Brooklyn, N. Y., a fireproof building, has all film handling departments divided into small rooms. If the floors were not so sub-divided, a total loss of this risk would be well within the realm of possibilities. The explosive propensities of the stock, coupled with the intense heat created, would make this well nigh certain. Sub-divide each floor in the building in the manner indicated, with only a small amount of film in each room, and a total loss becomes less likely.

Naturally, in reducing the possibility of a fire-spread over the entire floor area, particularly with highly combustible merchandise, the floor-to-floor exposure hazard will also be lessened.

IV

SPRINKLERED RISKS

Protection at stair and elevator openings has been the cause of much misplaced confidence, especially in sprinklered risks. That weak cut-offs are strengthened by automatic sprinklers is not to be denied. On the other hand, sprinklers should not be expected to do the impossible. A brief stating of the case should assist us in arriving at a clearer realization of the acualities.

Referring first to **joisted** brick buildings where the stairways and elevators are in brick towers. Metal-clad doors, closed by springs, are at the stair openings and swinging metal-clad doors are at elevator openings. Theoretically then, we have a sprinklered joisted brick building with protected floor openings. If fire insurance and the underwriting of risks were all theory, we would have an easy time of it. Unfortunately, practice and experience have a habit of upsetting theory. Instead of our protected floor openings we find that the elevator boy was too preoccupied to close the doors when he left the floor. The law saw to it that safety gates would

prevent anyone stepping into the open elevator shaft. The employees, wanting ventilation, tied the stair doors open with a piece of string—and there you are. This, by the way, is the **rule**, not the exception. We are speaking of single and multiple tenant risks.

A recent fire in the top floor of a sprinklered, joisted brick building in Philadelphia, occurring on a Saturday night, opened one sprinkler head, which extinguished the fire. There being no watchman and no alarm valve, the water flow continued uninterrupted down the stairways and elevator shaft and through the floors until Monday morning. The stocks throughout the building were found to be ruined.

A fire in a sprinklered, joisted brick building in Brooklyn, N. Y., with so-called protected floor openings, resulted also in a loss on each floor. This was a four story building occupied by several tenants for light manufacturing purposes. Each tenant put in a claim of some sort, yet the stairs and elevators were in brick shafts with metal-clad doors.

This leads us to the conviction that it is dangerous to consider stair and elevator opening protection, in an ordinary joisted building, sprinklered or not, as anything but a most unreliable draft check. They cannot possibly be considered cut-offs in any sense of the word. In summer we find the doors tied open to aid ventilation, and in winter we find them tied open because no one has thought of closing them. Occasionally they are found closed, but we have no assurance they will remain so.

Conditions in **mill constructed** buildings are usually not much better. In a thoroughly mill constructed building in Philadelphia the fire spread from the cellar to the fifth floor **by means of the brick elevator shaft**, which, in this case acted precisely as a **chimney.**

The stair tower or elevator shaft has only too frequently spread a fire through the building. In a cheap upholstered furniture factory we inspected in Brooklyn, N. Y., we found the entire stock of tow, used for stuffing, stored in the basement at the foot of the elevator shaft. It requires no great imagination to predict what will happen to that risk some day.

In **fireproof** sprinklered buildings there is a greater average of doors kept closed. There is no reason whatever why this should not be so. The insurance companies could force this condition upon the assured if they so desired. They risk thousands of dollars, practically, on these doors and have a paramount interest in the matter.

So much for stair and elevator protection in sprinklered risks. Let us now examine the brighter side of the relation of sprinklers to cut-offs.

Supose we have a weak cut-off at a vital point in the plant. The door is flimsy and insecure, or a minor explosion has weakened the cut-off. Without sprinklers we may reasonably expect the fire to reach the cut off section. However, back up this weak cut-off with sprinklers, and the cut-off assumes formidable proportions. This has been established beyond a shadow of doubt a number of times. The sprinkler water will cool the hot gases and flames sufficiently to check the fire at the cut-off. There will be water damage, but this is preferable to destruction by fire.

Of course, we cannot expect the impossible. The sprinkler system may be wrecked by an explosion. The occupancy may be such that water virtually adds fuel to the fire.

Summarizing the effect of sprinklers on cut-offs, we might briefly state:

1—In joisted brick buildings, sprinklers form no basis for materially increased dependence upon floor cut-offs.

2—In sprinklered mill constructed buildings it is best to place only limited reliance upon protected floor openings, and then only after careful inspection.

3—In sprinklered fireproof buildings we may depend, within reason, upon floor cut-offs, after inspection.

4—Practically all wall cut-offs are very decidedly strengthened when backed up by an efficient sprinkler system.

V

PROCESS CUT-OFFS

There are cut-offs which are primarily intended to reduce the hazard of a risk, by isolating the dangerous processes or materials from the remainder of the occupancy. They usually have no measurable effect upon the distribution of values, and must be viewed solely in the light of their efficiency to reduce the physical hazard in the major part of the risk.

This subject is a very broad one. A thorough analysis would take up considerable space. We can, therefore, touch only briefly upon its more important phases.

Granting the cut-off to be constructed according to standard specifications, and to be adequately maintained, there are three major factors which may destroy the efficiency of a cut-off, namely: flash fires and explosions, flowing vapors or burning liquids and transmitted heat. These may all be inherent to the occupancy of the risk.

Years ago, when the textile industry was in its infancy, the spinners soon learned that they must do something definite about their cotton pickers if they were to avoid periodical destruction of their plants. That, probably, was the first serious attempt upon the part of American industry to isolate the notable hazards from the major part of the occupancy. Fortunately for the textile man, cotton "stays put," and does not run all over the place when given a chance. The cotton spinner can isolate his chief fire hazard efficiently.

The oil refiner faces a different problem. His merchandise, if we may call it that, is fluid. It is likely to escape the containers and rapidly spread over considerable area. To define standard cut-offs, applicable to all oil risks, is an impossibility, but a few fundamental principles are pertinent to most oil risks. Seek level ground for oil tanks, or if not level, at the lowest grade of the plant, not on top of a hill. Streams running through a mill yard, looked upon with favor in a manufacturing plant, are a menace to the refinery. Vegetation between tanks and buildings can very easily offset the safety obtained through tank spacing. Give stills plenty of room, and keep them in the open.

Gasoline vapors are about one and one-half times heavier than air. A peculiarity of all gases is that the higher their specific gravity, the less tendency they have of mixing with air. Therefore gasoline gas, when present in a room, usually remains close to the ground, not over four feet from the floor on the average. The majority of adult human noses is above this average level, hence the presence of gasoline vapors in a room is not readily detected. The danger in this peculiarity of gasoline gas comes home to the underwriter in the writing of dry cleaning plants, oil refineries, extracting plants, etc. Vapors from a gasoline storage tank seeping through the roof, will sink to the ground, travel a long distance in the open, and if then ignited, will flash back to the tank. Numerous instances of this kind are on record. A tank car with casing-head gasoline was being emptied while on a siding. Over a hundred feet away was a shanty containing a small stove. Vapors from the car traveled to the shanty, exploded, killing the occupants of the shanty and the man on the tank car, and ignited the car.

There is a dry cleaning plant in New York City which has the gasoline washing department on the top floor. There must be communication between the departments. There may be fire doors at the communications, but they are for fires, not vapors. The sinking vapors permeate the entire building, and an explosion occurs which wrecks brick walls and fire doors. In all risks, where explosion possibilities exist, the cut-offs must be largely disregarded.

The drying hazards of many industries, which includes japan, enamel and lacquer drying, are also frequently cut off. They may be gas heated driers, full of explosive vapors, large brick works driers operating at a high temperature or they may be textile driers with quite inflammable contents. The drier itself may burn, its contents may cause an intense fire, or, again, the drier may explode.

In drying dessicated cocoanut, for instance, a hazard common to many driers is developed. The cocoanut is subjected to a high degree of steam heat so that the natural oils are virtually distilled out of the cocoanut. These oils condense upon the inner walls of the drier. In time we have a steel drier lined with highly inflammable,

partly oxidized oil. Eventually a very severe fire ensues, although there may be no stock in the drier at the time. A notable instance of this kind occurred in Brooklyn not so long ago, and will undoubtedly happen again. Many wool driers are subject to the same hazard, especially where carbonizing under high temperature is done. In all instances the inherent hazard must be considered in determining the value of the drier cut-off.

In alcohol distilleries the heat of the fire may be so intense, that it readily passes through cut-offs. Add to this the explosion possibilities, the danger of flowing burning liquids, and the further disturbing fact that alcohol will burn excellently even when diluted with 60% of water, and we have a correct picture of the handicaps under which some cut-offs are placed. In many chemical plants we face similar problems.

The greater the resistance encountered by the explosion, the more severe the ultimate damage will be. Dust explosions in coal grinding plants, flour mills, spice mills. cork works, charcoal plants, etc., offer the same dangers. Celluloid works, lacquer spraying plants, paint factories, public garages, etc., are all subject to very severe and rapid-spreading fires, which may easily travel through protected door openings before the doors have had time to close.

VI

YARD SPACING

A risk may consist of several buildings, more or less segregated, the group comprising a complete manufacturing unit. The cut-offs in this type of risk may be viewed in the light of exposure between units.

Primarily we must consider "facing" wall construction, cornices, parapets and window protection, distance between buildings, and fire protection. As usual, however, the occupancy of the buildings is often a deciding factor.

In the textile industry, with one building occupied as a raw cotton warehouse, another for storage of finished

stock, a separate picker house, a carding department, a spinning mill and a detached weave house, we face a problem which may be determined with reasonable accuracy.

A patent leather factory, involving doping with amyl-acetate solutions of pyroxylin requires wider segregation owing to the explosion possibilities. Topography must be considered in selecting the site for the dope storage tanks.

Height of buildings is also important. With the tendency of fire to go upward, a low constructed building is less liable to ignition from adjacent burning buildings than a tall building.

Of course, each risk presents a different problem. There is a cork board factory in Brooklyn, N. Y., comprising three small, one story corrugated iron and steel frame buildings, spaced possibly twenty feet apart. The grinding building (cork dust explosion hazard) is in the centre. Question: of what value is the cut-off?

No two risks of the same occupancy are alike, and only careful, analytical inspection will disclose the weaknesses or virtues of yard spacings between buildings comprising a complete manufacturing plant.

As with exposures, open sprinklers are of value here. A splendid reinforced concrete, sprinklered, main building of the plant may be very severely damaged by a minor frame building. This has recently occurred in Philadelphia where the frame building was detached forty feet. Open sprinklers would undoubtedly have reduced the damage in this case.

VII

SMOKE LOSSES

Successful underwriting is a many sided task. The underwriter is required to be thoroughly versed in the fundamental principles of fire insurance, the Exchange and Board rules, and also faces the far more comprehensive problem of keeping himself thoroughly informed

on new processes and hazards. New and improved methods and materials in a given line of manufacture not only introduce new underwriting problems, but frequently create a phase of moral hazard through obsolescence of the discarded processes.

Among the many considerations which present themselves to the underwriter as he sets his line, is the question of susceptibility to smoke damage. If he writes a stock which is practically impervious to damage by smoke, he considers only the possibility of fire and water loss. However, if he happens to be writing a line on highly susceptible stock, such as foodstuffs, tobacco or millinery, he will be quite conscious of the smoke damage possibilities.

Very frequently the question of smoke damage is not considered beyond the point of damage by smoke from a fire originating within the section insured. It is possible, and it has occurred with sufficient frequency to prove the point, that a susceptible stock may be severely smoke damaged from a fire originating in an adjoining cut off section. The underwriter thoroughly appreciates that his stock may be damaged by a nearby fire, smoke may enter through windows, open doors, improper cornices, etc. But there are times when the question of smoke damage becomes more significant.

A two or three section risk is offered. Communications between the sections are protected by standard fire doors. The line offered may be evenly distributed in the sections, but it happens to be a class of merchandise which is highly susceptible to smoke damage, such as tobacco. The fire doors will hold the fire, but they are not gas tight, and smoke will pass through. The extent of the damage to the cut off stock will be dependent upon its susceptibility.

There is another problem presented by smoke, one which the underwriter will find it much more difficult to guard against. A smoke explosion may occur which will destroy brick walls and cut-offs.

Perfect combustion of most fuels produces no smoke, hence smoke is the result of imperfect or incomplete combustion or oxidation. Buildings are erected for useful purposes, and not for the destruction of their contents by

fire. Therefore, when a fire occurs, combustion is bound to be more or less incomplete, and smoke results. The chemical composition of this smoke will be largely controlled by the materials the fire has fed upon. Smoke is a very complex gaseous mixture, carrying more or less solids of various composition known as soot and a large amount of carbon-monoxide. This complex vapor may be violently explosive when mixed with the correct proportion of air. To illustrate, fire may take place among a quantity of packing material such as straw or excelsior, stored in the cellar. Owing to poor ventilation and the close packing of the stock, large quantities of smoke are produced. The smoke travels up stair or elevator shafts where it receives the proper admixture of air. If the mixture comes in contact with flame, an explosion ensues, which may destroy existent cut-offs. This has been demonstrated upon numerous occasions.

While it is practically impossible for the underwriter to foresee the danger in all instances, it is wise for him to bear it in mind when considering cut-offs.

VIII

WATER DAMAGE

Considerable mention has been made in this discussion regarding water damage, particularly in the chapter dealing with sprinklered risks.

There is, however, an angle to the question of water damage and its relation to cut-offs, which is of paramount importance to New York City underwriters.

New York is outstandingly a city of multi-storied, fireproof buildings. These buildings may be sprinklered or unsprinklered, but an extremely negligible proportion has waterproofed, or drained and scuppered floors. This unfortunate condition exists because the building laws do not require otherwise, and it appears axiomatic that a New York builder will do nothing he is not compelled to do.

In a previous chapter, relating to floor cut-offs in fireproof buildings, we indicated the vulnerable points from a fire standpoint. It is a fact that the concrete floor may constitute a perfect fire cut-off, but it is also a very important fact, one which must not be overlooked by the underwriter, that the same concrete floor is a very poor barrier against the water used to extinguish the fire. This is, unfortunately, demonstrated practically every time a loss occurs in a fireproof building.

The absence of scuppers, the porous composition of the concrete used, the average lightness of the floor slab (4½″) and the careless construction during and immediately following the war, are responsible for this condition.

It is usual for a loss to spread from one to three floors below the floor of the fire, purely from seepage of water through the floors. In an extreme case the loss was felt for ten stories below the scene of the fire. In a recent instance in New York City, the fire loss on the ninth floor was $20,000. The water damage loss on the eighth, seventh and sixth floors, totaled $36,000. It is noteworthy, and should give underwriters food for sober thought, that at least one-third of the insurance losses in fireproof buildings in Manhattan would be eliminated if seepage losses could be checked.

An additional disturbing feature of this deplorable condition lies in the fact that there is no abatement of this situation in view. As small buildings continue to make way for tall multi-storied buildings, in just that proportion will the loss ratio ascend, for do not forget, the new buildings do not pay the rate of the old ones.

It is to be hoped that New York underwriters, by the use of advanced rates, will force a termination to this intolerable state of affairs. There can be no difference of opinion regarding the fact that the existing porous floors in fireproof buildings can be successfully waterproofed.

IX

DISTRIBUTION OF VALUES

Conceding that the building has standard and well maintained cut-offs, that the stock is non-volatile and not explosive, and still the task of estimating the amount subject is not simple.

The underwriter issues his policy for a year, a cycle of four seasons, each bringing its own problems.

There are many industries which are seasonal and which are dependent upon the climatic changes for the acquisition of stock. Some localities are more or less dependent upon their basins and canals for moving merchandise. Some concerns will store up raw stock during the fall for use during the winter months when shipping by water is not so advantageous. This throws a disproportionate value in raw stock, for a period, at a point where normally it would not be of great importance.

During the Christmas season heavy values in finished stock may be concentrated at one point, completely upsetting the average yearly calculations.

An assured may be engaged on a large contract. When the work commences the values are in one section, and as operations progress the values will shift until they are nearly all in another building. A change such as this may occur in one day without knowledge to the underwriter, simply by the receipt of a large foreign consignment of expensive merchandise such as silk or tobacco.

A large shipment of merchandise is sent to a dealer. As it arrives at a public warehouse, which is divided into several sections, it is insured. Is it concentrated in one section or is it stored in several sections? It is supposed to be spread over a number of fire sections, but did this actually occur? Only too often is the merchandise found in **one** section, which was underwritten on the assumption that it was in three sections. In case of a fire the result may be very expensive.

The shifting of values in all risks is a possibility seriously affecting the underwriter in all cases where he depends upon a division of his liability. The only safeguard the underwriter has against this danger is his inspection department. The inspector must be familiar with the processes and peculiarities of operations of the risk he is inspecting.

When a risk if pronounced 50% subject, cognizance is taken of the probable shifting of stock. The risk, at the time may be only 25% subject, but at some time during the life of the policy, values will be more concentrated. As we have no assurance that the fire won't occur under the most unfavorable circumstances, we call the risk 50% subject.

An assured occupying a floor of a fireproof sprinklered loft building, may devote 50% of his floor space to office, display and advertising purposes, 40% to manufacturing purposes, and 10% to the storage of raw and finished stock. One or two sprinkler heads opening over the stock can give the underwriter a practically total loss in a very few minutes. Divide this 10% area into two 5% units, at extreme ends of the floor, and the underwriter has a chance for a partial loss. But the question is, how frequently is ALL OF THE STOCK in one of the 5% areas?

X

CONCLUSION

Many years of practical inspection experience has taught us that determining the dependability of cut-offs is a most complex task. Each risk presents a different set of problems which can only be solved by careful inspection and analysis.

Matters are complicated by present day competition; the irresistible desire for an ever expanding premium income, to which must be added the natural desire on the part of the underwriter to accommodate good brokers on lines where existing commitments are already up to the limit.

On the other hand, no underwriter enjoys finding himself overlined when a loss notice comes in. He may have been honestly misinformed about the risk at the time his line was set; his source of information regarding the amount subject may have been unreliable.

The determination of the "amount subject" is the most important factor in all underwriting problems. Therefore, the decision should be entrusted only to those whose adequate training and wide experience entitle them to the underwriters' absolute confidence.

END OF
TITLE